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Craterium corniculatum sp. nov. from northwestern China

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Abstract —*Craterium corniculatum* is a new species collected in Gansu Province, China, characterized by horned sporophores and warted spores. We provide a morphological description, illustrations, and a key to the 17 *Craterium* species. The specimens were deposited in the Herbarium of Mycological Institute of Jilin Agricultural University (HMJAU), Changchun, China.

Key words — taxonomy, SEM, slime molds, *Myxogastrea*, *Physaraceae*

Introduction

Myxomycetes are common inhabitants of decaying plant materials in nature, such as decaying logs, stumps, and dead leaves (Stephenson & Stempen 1994). Trentepohl established the genus *Craterium* in 1797 for myxomycetes with stalked sporophores, a persistent basal cup, and subglobose or turbinate obovate sporocarps that show a distinct or indistinct lid during dehiscence (Martin & Alexopoulos 1969). In 2012 we found a new species on the bark of a dead log on Jilian Mountain, Gansu Province, China, that differs morphologically from all other *Craterium* species.

Materials & methods

The fruiting bodies and microscopic structures were examined by light and scanning electron microscopes (Martin & Alexopoulos 1969, Zhang & Li 2013). Permanent slides were mounted in Hoyer's reagent (Martin & Alexopoulos 1969). We prepared them according to Robbrecht (1974) by spreading capillitia in a drop of 94% alcohol, determining colour after one minute, and then mounting in Hoyer's reagent. Colour terms are given according to Flora of British Fungi (Royal Botanic Garden Edinburgh 1969).

We observed more than ten sporocarps under a stereomicroscope (20×) and more than 20 spores under an optical microscope (100×). The sporophores, capillitia, and

spores were measured by using a Nikon DM1000 microscope and photographed with a Canon G15 camera. For ultrastructural observation, the sporophores were attached to the holder, coated with gold using a Hitachi E-1010 sputter, and examined with a Hitachi S-4800 scanning electron microscope at 10 kV at Changchun Institute of Applied Chemistry, Chinese Academy of Sciences. The specimens were deposited in the Herbarium of Mycological Institute, Jilin Agricultural University (HMJAU).

Taxonomy

Craterium corniculatum B. Zhang & Yu Li, **sp. nov.** Plate 1

Mycobank MB 806043

Differs from *Craterium aureomagnum* and *C. aureum* by its horned sporophores and warted spores.

Type: China, Gansu Province, Jilan Mountain, on bark of a dead log, 6 August 2012, Zhang Bo 20122203, (**Holotype,** HMJAU10550).

Etymology: corniculatus (Latin), referring to the 'horned' sporophores.

Sporophores gregarious, in small groups, shortly stalked or nearly sessile, 0.25–0.75 mm tall. Sporotheca subglobose or pyriform to irregular, 0.2–0.5 mm in diam. Hypothallum conspicuous, membranous, pale yellow, veined with ribs radiating from the sporocarp base. Stalk either lacking, or very short and consisting of updrawn hypothallus, strongly ribbed, yellowish brown, pale brown in transmitted light. Lid paler than cup, usually with a paler calcareous deposit, yellowish pale by transmitted light, with pale dehiscence lines and circumscissile area. Peridium thick, single, cartilaginous, containing small lime. Capillitium rather dense, lime nodes rounded or angular, large, pale yellowish brown by transmitted light, 40 × 70–80(–100) µm. Spores free, fuscous black in mass, dark brown by transmitted light, subglobose, 8–14 µm diam., densely warted.

Additional specimen examined: **China**, **Gansu Province**, Jilan Mountain, on bark of a dead log, 26 August 2010, Zhang Bo 20101201 (HMJAU10551).

Comments: Of the 16 species reported for *Craterium* Trentep. (Kirk et al. 2008, Lado 2005–13), seven have been found in China: *C. aureum* (Schumach.) Rostaf., *C. concinnum* Rex, *C. leucocephalum* (Pers. ex J.F. Gmel.) Ditmar, *C. microcarpum* H.Z. Li et al., *C. minutum* (Leers) Fr., *C. obovatum* Peck, and *C. rubronodum* G. Lister (Li & Li 1989, Li et al. 1993). Among the 16 accepted species, only *C. aureomagnum* Hooff & Nann.-Bremek. and *C. aureum* are similar to *C. corniculatum* in having yellow sporocarps, but *C. aureomagnum* has larger sporocarps (0.7–1.5 mm tall), double peridia, and darker and prominently warted spores that are 10–12 µm in diam. (Hooff & Nannenga-Bremekamp 1996), while *C. aureum* has stalked, turbinate, or obovoid sporocarps that are 0.7–1.0 mm tall and lemon-yellow to almost white (Rostafinski 1974).

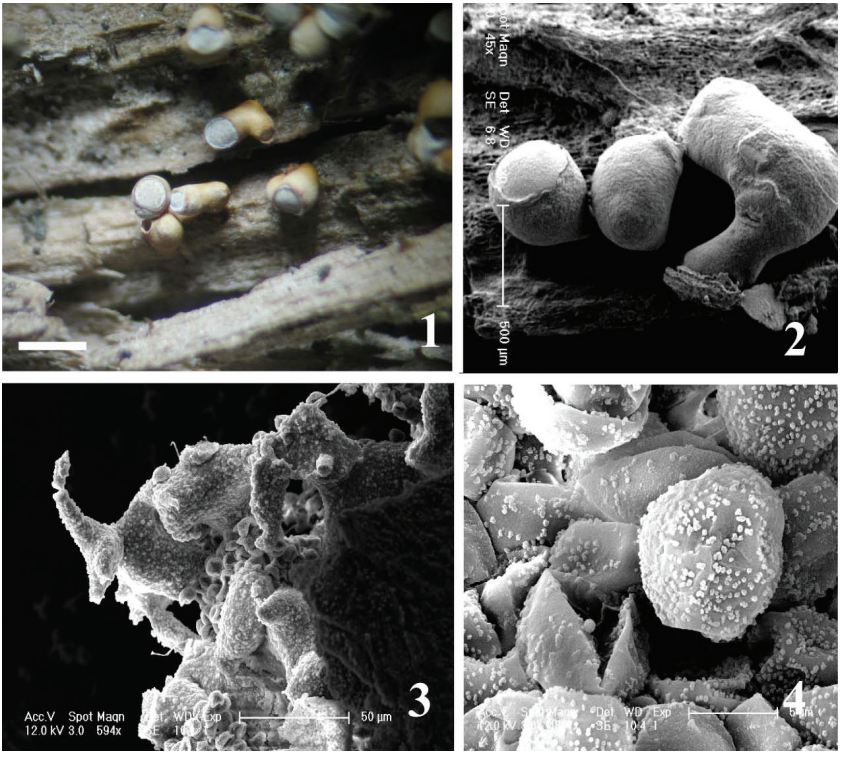

Plate 1. *Craterium corniculatum* (Holotype, HMJAU 10550): 1–2, fruiting bodies; 3, capillitium; 4, densely warted spores. Scale bar: 1 = 2 mm.

Key to species of *Craterium*

1. Sporophores dehiscing by a distinct lid 2
1. Sporophores not dehiscing by a distinct lid 8
2. Spores reticulate . . . . . *C. retisporum*
2. Spores spinulose and warted 3
3. Spores <10 µm in diam. 4
3. Spores >10 µm in diam. 6
4. Lid dome shaped, fragmenting by preformed lines at dehiscence 5
4. Lid convex or fat, not veined, remaining whole at dehiscence 7
5. Sporocarps 0.15–0.41 mm high; spores 8–10 µm in diam. . . . . *C. microcarpum*
5. Sporocarps 0.6–1 mm high; spores 7–9 µm in diam. . . . . *C. reticulatum*
6. Sporocarps short (0.5–0.8 mm high); spores 9–10 µm in diam. . . . . *C. concinnum*
6. Sporocarps taller (≤1.5 mm high); spores 8–10 µm in diam. . . . . *C. minutum*

7. Spores 10–12 μm in diam. with 1μm tall spines ..... *C. rubronodum*
7. Spores 13–15 μm in diam. with groups of confluent spines ..... *C. costatum*
8. Sporophores obconic; becoming cup-shaped after dehiscence 9
8. Sporophores obovoid, turbinate, corniculate; dehiscence irregular 10
9. Sporocarps usually stalked; spores 7–10 μm in diam. ..... *C. leucocephalum*
9. Sporocarps sessile or short-stalked; spores 9–10 μm in diam. ..... *C. aureonucleatum*
10. Sporocarps yellow 11
10. Sporocarps bright pink, purplish pink, red brown 13
11. Sporocarps stalked ..... *C. aureum*
11. Sporocarps sessile or very short-stalked 12
12. Sporocarps subcylindric; spores 10–12 μm in diam. ..... *C. aureomagnum*
12. Sporocarps corniculate; spores 8–14 μm in diam. ..... *C. corniculatum*
13. Sporocarps bright pink, purplish pink ..... *C. paraguayense*
13. Sporocarps red brown, purplish brown, dark brown to black 14
14. Spores warted, <13 μm in diam. ..... *C. atrolucens*
14. Spores coarsely warted, subreticulate or reticulate, >13μm in diam. 15
15. Spores with dark prominent warts ..... *C. obovatum*
15. Spores subreticulate or reticulate 16
16. Spores marked with an incomplete net of broad spines fusing into short ridges, 14–17 μm in diam. ..... *C. dictyosporum*
16. Spores loosely reticulate by ridges about 1 μm high, 13–16 μm in diam. ..... *C. muscorum*

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Literature cited

Hooff JPM van, Nannenga-Bremekamp NE. 1996. Additions to the myxomycetes of the Netherlands. Proceedings van de Koninklijke Nederlandse Akademie van Wetenschappen, Section C, 99: 45–53.

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Ainsworth & Bisby's dictionary of the fungi, 10th ed. Wallingford, CAB International. 771 p.

Lado C. 2005–13. An online nomenclatural information system of *Eumycetozoa.* http://www.nomen.eumycetozoa.com (accessed: November 19, 2013).

Li HZ, Li Y, Chen SL. 1993. Myxomycetes of China XI: a new species of *Craterium*. Myxosystema 6: 113–115.

Li Y, Li HZ. 1989. Myxomycetes from China I: a checklist of myxomycetes from China. Mycotaxon 35(2): 429–436.

Martin GM, Alexopoulos CJ. 1969. The myxomycetes. Iowa, University of Iowa Press. 561 p. http://dx.doi.org/10.2307/1218569

Robbrecht E. 1974. The genus *Arcyria* Wiggers in Belgium. Bulletin du Jardin Botanique National de Belgique 44: 303–353. http://dx.doi.org/10.2307/3667676

Rostafinski JT, 1874. Sluzowee (*Mycetozoa*). Monografia. Paryz. 1–215

Royal Botanic Garden Edinburgh. 1969. Flora of British fungi: colour identification chart. Edinburgh, H.M. Stationery Office. 6 p.

Stephenson SL, Stempen H. 1994. Myxomycetes: a handbook of slime molds. Portland, OR, Timber Press.

Zhang B, Li Y. 2013 ["2012"]. Myxomycetes from China 16: *Arcyodes incarnata* and *Licea retiformis*, newly recorded for China. Mycotaxon 122: 157–160. http://dx.doi.org/10.5248/122.157